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Shipbuilding in Italy, 1861-1913: The Burden of the Evidence

*Carlo Ciccarelli & Stefano Fenoaltea**

Abstract: »*Schiffsbau in Italien, 1861-1913: die Last des Beweises*«. Shipbuilding in post-Unification Italy is here documented by new national and regional time series. Where the extant national series point to secular decline, the new estimates reveal a major increase in output tied primarily to the growth of repair work on the one hand and of naval construction on the other. The regional estimates, which have no precedent in the literature, point to considerable concentration: Liguria accounted for more than half the product, and Campania for almost another quarter. Again, while in most regions shipbuilding was barely significant, in Liguria it represented up to a quarter of total industrial production. The further disaggregation of naval construction points to significant exports, from the 1890s, by the private yards in Tuscany and Liguria; the consensus view that Italy's engineering industry was then too backward to export at all is clearly unfounded.

Keywords: Shipbuilding, Italy, Economic History, Cliometrics.

The interpretation of Italy's development in the decades that followed Unification turns to no mean extent on the actual, and counterfactual, performance of the engineering industry (Cohen J. S. and Federico G. 2001). The facts themselves are poorly documented, however, and the industry's time path is typically measured indirectly, by the apparent consumption of iron and steel (e.g., Gerschenkron A. 1955, Carreras A. 1999, Fenoaltea S. 2003a).

Within "the vast and variegated area of engineering," as Alexander Gerschenkron put it (Gerschenkron A. 1955, 369), shipbuilding stands out as something of a special case. On the one hand, it is poorly captured by the usual measures, for its production was partly, and in the early years overwhelmingly, wood-based rather than metal-based; on the other, it was subject to sector-specific technological and political shocks, and responded idiosyncratically to more general ones (e.g., war-related movements in shipping rates). Fortunately, however, it is extensively documented in its own right, as both the merchant

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The regional estimates were produced as part of the research project on "Unità d'Italia e sviluppo disuguale: la struttura creditizia e la crescita industriale per regioni dal 1861 al 1913" of the Ufficio Ricerche Storiche of the Bank of Italy. The authors alone are responsible for the material presented here. David Chessum and Achille Rastelli generously shared information from their specialized collections, and are gratefully thanked.

marine and the navy were then, like the railroads, the object of systematic reports, parliamentary investigations, and an extensive secondary literature.

These sources are used here to generate new time-series estimates for the shipbuilding industry, narrowly defined to exclude work on inshore and inland vessels (“boats”). The new national series confirm that shipbuilding went very much its own way, with production movements driven first by the market for traditional merchant sailing-ships, then by naval construction, then by the subsidies for merchant steamers, and finally, in the run-up to the War, by the arms race. Overall, the shipbuilding industry displayed healthy growth, with a trend rate sufficient to treble production over half a century. Its progress was driven largely by repair work and especially by naval construction; the extant official series neglects both of these, and displays a declining trend.

The regional series, which are the first of their kind, document the concentration of production in Liguria and Campania. These two started close to even, but Liguria took greater advantage of the early sailing-ship boom, and then captured a clear lead in the production of metal ships of all kinds; it would be the privileged beneficiary of the pre-War arms race, as of the ensuing blood-bath.

The naval shipbuilding series are further disaggregated to separate arsenal and private-yard new construction. Liguria and Campania dominated the former, Liguria (again) and Tuscany the latter. From the early 1890s the private yards worked extensively for the export market: the consensus view that Italy’s engineering industry was then too backward to export at all is clearly unfounded.

1. National production

The new national estimates of 1911-price value added in ship construction and maintenance are summarized below in Appendix Table A. Cols. 1 and 2 refer to the new construction of merchant and naval vessels, respectively; both are simple sums of the physical series (in register or displacement tons) transcribed in Appendix Table B, with the 1911-price value added weights also transcribed therein.¹

The two type-specific merchant-marine construction series in Appendix Table B, cols. 1-2 are derived from the well-known data in the annual reports on the merchant marine (e.g., Ministero di Agricoltura, Industria e Commercio 1885, 433, Ministero della Marina 1913, 73; see also, for example, Corbino E. 1922). The series in the (primary and secondary) sources report the register

¹ Displacement tons are measures of weight. Register tons are measures of internal volume; gross tonnage includes, and net tonnage excludes, that occupied by the vessel’s machinery and the like. As a rule of thumb, in the case of steamships one net ton corresponds to one displacement ton, fuel and cargo excluded.

tonnage launched; the present series improve them by allowing for changes in Italy's borders and for changes in the unit of measurement, and shift the resulting figures six months backward to approximate construction.² The 13 type-specific naval construction series in Appendix Table B, cols. 3-15 are built up from ship-specific data in contemporary and retrospective sources; they cover the 490 naval vessels reportedly built in Italy for the Italian navy or for export, and distribute the displacement tonnage of each ship over its construction period.³ The corresponding value added weights are obtained as usual from market prices and technical coefficients; they refer to the shipbuilding sector alone, and accordingly exclude the cost of equipment purchased from other sectors of the engineering industry.

Appendix Table A, cols. 3 and 4 refer to the maintenance of merchant and naval vessels, respectively. The merchant-maintenance series is again the sum of separate series for sail- and steam-powered vessels. The former is indexed by the total tonnage of the fleet in service (again measured at constant borders, and in homogeneous units), with what turn out to be very minor corrections for imports and exports (maintenance abroad of Italian ships, and maintenance in Italy of foreign ships). The second is itself in two components, of comparable weight: one refers to the maintenance associated with the throughput of beaching slips and dry-docks (which served foreign as well as Italian ships), the other to the residual maintenance of Italian ships alone, again indexed by the (corrected) tonnage of the fleet.

In the case of naval maintenance, the sources include a wealth of descriptive information on the maintenance (and improvement) of individual ships, which does not lend itself to quantification, and aggregate budget figures, which change repeatedly and abruptly in apparent response to unspecified modifications in accounting rules. The budget data were accordingly used only to derive the 1911-price total; the corresponding "real" index is instead obtained by tracking the service lives of each of the 559 ships reported to have served in the Navy between 1861 and 1913, aggregating their displacements with type-specific weights (to exclude low-maintenance components like the armor, if any, and the cargo of bulk carriers), and trimming the resulting total to exclude the ships that were very new or very close to being retired.

Appendix Table C presents the estimates of the merchant fleets, of interest in their own right, of the equivalent naval fleet maintained, and of the three components of the aggregate merchant-maintenance series.⁴

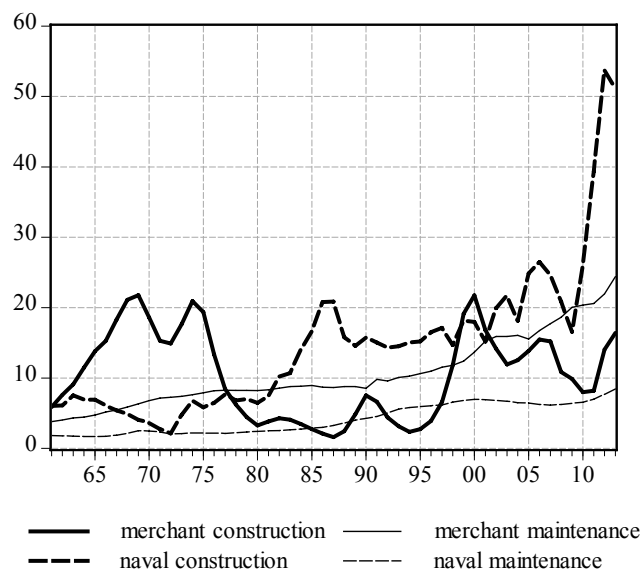
² The present tonnages are all reduced to Moorsom measures, actually used in Italy from 1874 to 1905.

³ The main retrospective sources are the publications of the Historical Research Office of the Italian Navy (e.g., Ufficio Storico della Marina Militare 1969, 1978); contemporary sources (e.g., Jane F. T. 1906) serve to identify Italian-built ships in foreign navies.

⁴ The merchant-fleet series may be considered improvements of those appearing in Istat 1958, p. 138, and Mitchell B. R. 1975, pp. 616, 621.

The four subaggregates presented in Appendix Table A are illustrated in Figure 1. The paths of the maintenance series are, not surprisingly, close to rising trends. Merchant maintenance displays some cyclical deviations in the later decades, which can be traced to the irregular decline of the sailing fleet, and the similarly irregular growth in dry-dock throughput.⁵ The occasional periods of decline in naval maintenance correspond instead to the large-scale scrapping of obsolete ships, both in the wake of Unification and again after the turn of the century. Merchant maintenance always far outweighed naval maintenance: naval vessels were the more complex, but on a comparable basis the merchant fleet was much larger, and much more intensively used. On the present estimates the annual average 1911-price value added in merchant maintenance equaled 10.7 million lire, against just 4.2 million in naval maintenance.

Figure 1: Shipbuilding in Italy: value added at 1911 prices (million lire)



Sources: Table 1.

The cyclical variations in new construction were altogether sharper, and its two components follow strikingly different paths. That of the naval-construction series is reminiscent of the overall cycle in investment and public spending, with a sharp upswing through the mid-1880s and another in the final

⁵ The visible upward step in the total in 1891 is itself attributable to the reopening of the large Orlando dry-dock in Leghorn.

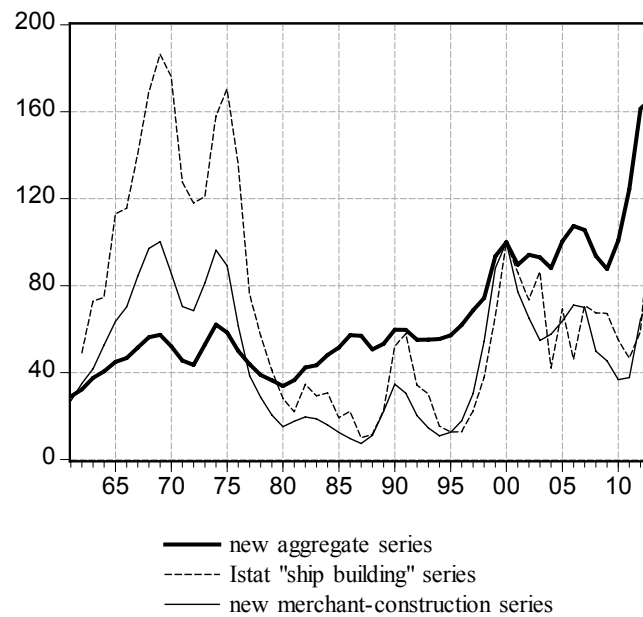
years before the Great War (Fenoaltea 1988); somewhat astonishingly, well over half the total at the pre-war peak was due to just five vessels, the *Cavour*- and *Doria*-class battleships then under construction.⁶ The main movements of merchant construction are instead the early (twin-peaked) boom and subsequent bust between 1861 and 1880, and a second sharp boom, followed by an irregular decline, after 1895. The first boom was entirely in sailing-ship construction (Appendix Table C, col. 1), and driven to all accounts by market forces (apparently the growth in the desired domestic fleet, itself tied to the growth of Italy's commodity imports, Istat 1958, 159-160); the second was instead in steam-ship construction, and clearly associated with the new subsidies to their builders and owners (e.g., De Courten L. 1989, 48, Flore V. D. 1970, 470-472). As is clear from Figure 1, merchant construction was the dominant component only in the early years; after that, and with only the brief exception of the steamer boom at the turn of the century, naval construction was much the larger. Overall, the 1911-price value added in merchant construction averaged 10.4 million lire per year, much like the corresponding maintenance, against 14.7 million lire per year in naval construction.

Figure 2 presents three time series as index numbers, with 1900 = 100. One is the present total reported in Appendix Table A, col. 5; another is the Istat "ships launched" series, which refers in fact only to merchant ships; and the third is the present component (merchant-ship construction: Appendix Table A, col. 1) closest to the Istat series (Istat 1958, 130). As an index of aggregate product, the Istat series seems entirely misleading: where the present total displays successively higher peaks in 1869, 1874, 1900, 1906, and 1913 and a trend growth rate of 2.24 percent per year (marginally above that of industry as a whole), the Istat series displays a secular decline from a peak in 1869 and a trend growth rate of *minus* 1.53 percent per year. The Istat series is naturally altogether closer to the present index of merchant construction alone, but again not as close as one might wish. Its main distortion seems to stem from the fact that it directly aggregates sail and steam register tons, and (in 1861-1907) *net* tons at that; because a steamer is a more complex machine per gross ton, and naturally has a much higher ratio of gross tons to net tons, the Istat series much understates the (steam-ship) output of the later years relative to the (sailing-ship) output of the early ones.⁷

⁶ The naval construction boom in the pre-War years was tied specifically to the pan-European Dreadnought race, that of the 1880s to the narrower Franco-Italian rivalry in the Mediterranean (Ropp T. 1941).

⁷ The Istat series is also more volatile than the present series, as the latter spreads tonnages launched over the plausible construction period, but that is by the bye.

Figure 2: Shipbuilding in Italy: index numbers (1900 = 100)



Sources: see text.

2. Regional production

The regional production estimates that correspond to the five national series in Appendix Table A are collected below as Appendix Tables D-H. The naval-construction estimates are again much the best: the sources identify the yards that built the ships, and the regional estimates directly replicate their national counterparts.

The merchant-construction estimates are somewhat weaker, for in the sources the local output totals are not broken down, as the national totals are, by vessel type. The latter breakdown is approximated by distributing among the various regions the tonnages of the steamers that could be identified as such (in the periodic lists of steamers, which however report their current register tonnages rather than those they first obtained), calculating the corresponding 1911-price value added, and then allocating the residual value added (in the construction of unidentified steamers as well as sailing vessels) in proportion to the residual tonnage constructed.

The maintenance estimates are weaker still. In the absence of better indicators the present regional estimates of naval maintenance disaggregate the na-

tional series in simple proportion to the labor establishment of the various naval arsenals; these also employed an unknown number of temporary workers, which would appear, and are here assumed, to have shot up when the yard was also engaged in new construction (e.g., Parlamento italiano 1914a, 90-91, 1914b, 52).

In the case of merchant vessels, finally, the national estimates for both the maintenance of sailing ships and the non-dry-dock maintenance of steamships are allocated in proportion to the tonnages registered in each region, on the assumption that such maintenance was performed primarily in the ships' home port, where the crew could be discharged. The national estimates of the steamers' dry-dock maintenance are instead allocated directly on the basis of the installations' relative throughputs, as reported from 1899, as estimated from partial data in 1879 and 1885-98, and as extrapolated or interpolated in other years.

Table 1: Shipbuilding in Italy's regions: shares of cumulative production (percent)

Region	(1) New construction		(3) Maintenance		(5) Total		(7) Total
	Naval	Merchant	Naval	Merchant	Naval	Merchant	
Piedmont	.0	.0	.0	.0	.0	.0	.0
Liguria	42.1	68.5	40.0	63.9	41.6	66.2	54.6
Lombardy	.0	.0	.0	.0	.0	.0	.0
Venetia	10.3	2.6	18.2	3.7	12.0	3.2	7.3
Emilia	.0	.4	.0	.3	.0	.3	.2
Tuscany	13.4	5.6	.3	4.3	10.5	4.9	7.6
Marches	.0	3.7	.1	.5	.0	2.1	1.1
Umbria	.0	.0	.0	.0	.0	.0	.0
Latium	.0	.0	.0	.2	.0	.1	.1
Abruzzi	.0	.0	.0	.2	.0	.1	.1
Campania	33.6	13.4	34.3	11.3	33.8	12.3	22.4
Apulia	.5	.7	6.4	1.7	1.8	1.2	1.5
Basilicata	.0	.0	.0	.0	.0	.0	.0
Calabria	.0	.2	.0	.3	.0	.2	.1
Sicily	.1	4.9	.0	13.5	.1	9.2	4.9
Sardinia	.0	.1	.6	.2	.1	.2	.2

Sources: see text.

Table 1 presents the shares of cumulative production claimed by the various regions. Geographically, production was highly concentrated, but with somewhat different patterns across its various components. Naval work was practically exhausted by just four regions: Liguria had some two fifths, and Campania a third, of both new construction and maintenance; Tuscany and Venetia each had another ninth of the total, with rather more new construction in Tuscany and much more maintenance in Venetia. The small residual (2%) is taken up almost entirely by Apulia, which had a certain presence in maintenance (6%). Merchant work was at once more concentrated in Liguria, which captured near two thirds of both new construction and maintenance, and more

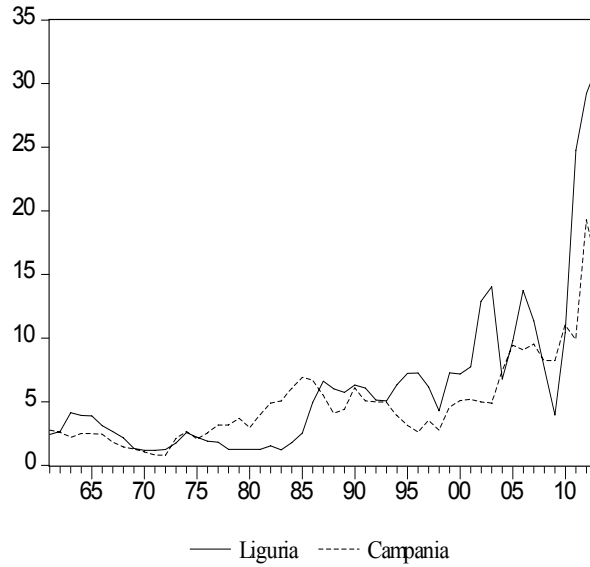
widely shared by the other regions: Campania took another eighth, Sicily less than a tenth (most of it in maintenance), and Tuscany a twentieth, with another 6% shared by Venetia, the Marches, and Apulia, and the residual 1% by the rest.

Figures 3-5 illustrates the paths of ship building and repairing in the two leading regions, Liguria and Campania. In naval work (Figure 3) the two regions long appear quite evenly matched. In new construction, the lead moved back and forth between them; in maintenance, their paths were close to each other and largely parallel (save in the 1870s, when Liguria took over the lead). In merchant work (Figure 4) one finds a very different pattern, and a sharp contrast between the two: where Liguria followed (or led) the sharp fluctuations in the national aggregate (Figure 1), Campania was more nearly stagnant. Campania participated in the early boom-and-bust in sailing-ship construction, but far less vigorously than Liguria; the later (subsidy-fed) boom in steamer production it largely missed, and between 1895 and 1913 Campania was only fifth in tonnage built, behind Liguria, Sicily, the Marches and Tuscany. In maintenance, tied to the locally-registered fleet, Campania and Liguria appear very even at Unification; but Campania then merely stagnated, while Liguria grew and grew - thanks also to the postal subsidies for steam navigation from which Campania's shipowners seem wilfully to have been excluded (Flore V. D. 1970, 358).⁸ The regional aggregates (illustrated in Figure 5) are dominated by the differences in merchant work: Liguria moved much as Italy did (or vice versa), Campania mainly plodded along.

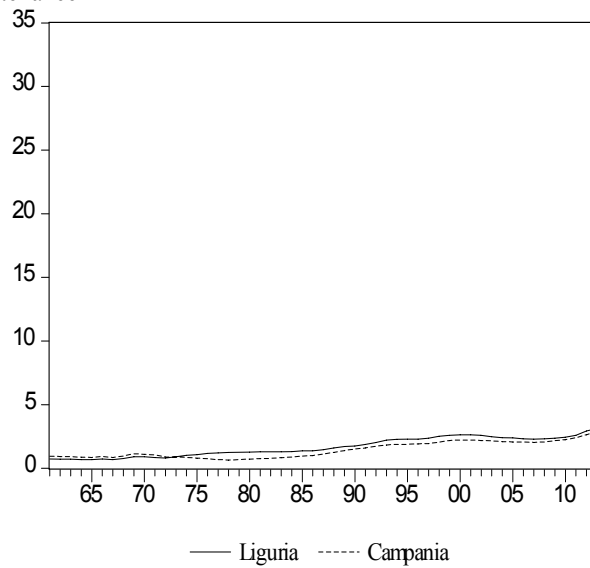
⁸ In the aftermath of Unification, when Italy's steam navigation was in its infancy, the postal subsidies could make or break a steamship company, and government ministers had their favorites; quite analogously, decades later and an ocean away, the U.S. Postmaster General awarded the Latin American air mail contract to Juan Trippe's Pan American, effectively dooming Ralph O'Neill's pioneering and far superior NYRBA airline.

Figure 3: Shipbuilding in Liguria and Campania: naval work
(million lire at 1911 prices)

A. Construction



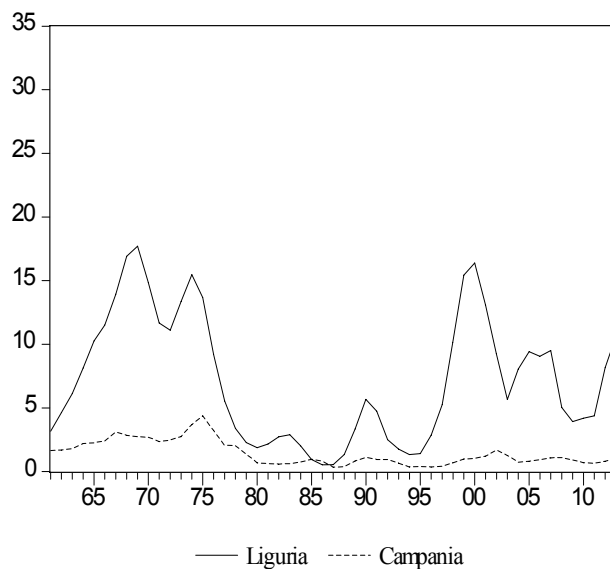
B. Maintenance



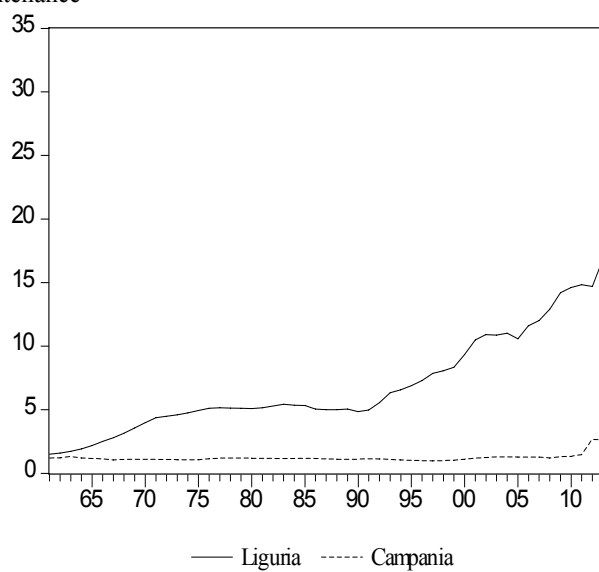
Sources: Appendix Tables E and G.

Figure 4: Shipbuilding in Liguria and Campania: merchant work
(million lire at 1911 prices)

A. Construction

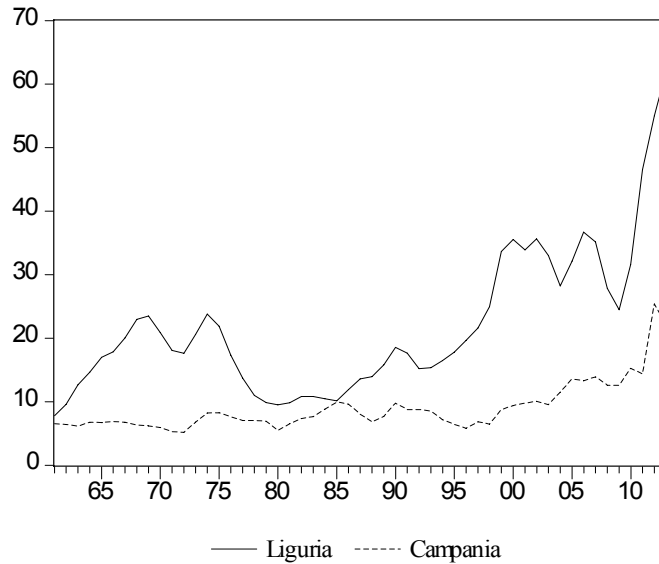


B. Maintenance



Sources: Appendix Tables E and G.

Figure 5: Shipbuilding in Liguria and Campania: total work
(million lire at 1911 prices)



Sources: Appendix Table H.

At the very end of the period at hand, as noted, the Dreadnought race lifted naval and overall ship building to unprecedented levels. Campania built just one of the five battleships laid down after 1909; Liguria, drawing on the capacity it had built up with its unique strength in merchant work, built the other four.

Table 2 scales the aggregate regional estimates to gauge the local significance of the industry at the census-year benchmarks. In cols. 1-4 they are divided by preliminary estimates of total industrial production; in cols. 5-8 they are divided by the male population of working age, which proxies for the aggregate regional economy (Fenoaltea S. 2003b, 1069, 1088-1091).⁹ On both counts, in Italy as a whole shipbuilding appears to be of no more than average import.¹⁰ Above-average ratios are found only in the two regions one has come to expect. Campania's ratios run roughly double the national averages; Lig-

⁹ The updated aggregates incorporate partly unpublished new estimates for mining and quarrying, textiles and (non-leather) apparel, metals and non-metallic mineral products, chemicals and the like, the utilities, and construction

¹⁰ Shipbuilding is just one sector among many dozens, and the average share of each sector is perforce quite small.

uria's run ten to twenty times those averages, and, like these, reflect the idiosyncratic cycle in shipyard work.

Table 2: Shipbuilding in Italy's regions: local significance, census years

	(1) Share of shipbuilding in industrial production (percent)	(2) 1881	(3) 1901	(4) 1911	(5) Shipbuilding product per male of working age (1911 lire)	(6) 1881	(7) 1901	(8) 1911
Piedmont	.0	.0	.0	.0	.0	.0	.0	.0
Liguria	24.7	11.2	22.7	15.8	64.1	32.8	91.6	110.6
Lombardy	.0	.0	.0	.0	.0	.0	.0	.0
Venetia	1.1	1.0	1.3	.9	2.0	2.0	3.5	4.0
Emilia	.1	.0	.0	.0	.1	.1	.1	.2
Tuscany	.7	1.3	.9	.8	1.3	3.0	2.9	3.7
Marches	.3	.2	1.3	1.4	.4	.3	2.8	4.4
Umbria	.0	.0	.0	.0	.0	.0	.0	.0
Latium	.0	.0	.0	.0	.1	.1	.0	.1
Abruzzi	.1	.0	.0	.0	.1	.0	.0	.1
Campania	3.1	3.0	3.5	3.6	5.6	6.7	9.9	14.0
Apulia	.3	.2	1.0	.6	.4	.3	1.8	1.8
Basilicata	.0	.0	.0	.0	.0	.0	.0	.0
Calabria	.2	.1	.0	.0	.2	.1	.1	.0
Sicily	.5	.6	.9	1.1	1.0	1.3	2.0	3.2
Sardinia	.1	.1	.2	.1	.1	.1	.4	.4
Italy	1.6	1.1	1.8	1.5	3.0	2.3	5.2	6.8

Sources: see text.

These estimates suggest that shipbuilding by itself represented from a tenth to a quarter of Liguria's industrial value added; and even these remarkable proportions understate the industry's local importance, for they include the installation, but not the construction, of the ships' engines and weapons. In the case of naval vessels, in particular, such equipment might cost as much again as the assembled hull; its origin is hard to pin down, as it moved easily across regional (and national) borders, but the secondary literature suggests that a large part was produced in Liguria itself.

In the Italian context, and at comparable levels of disaggregation, this degree of regional specialization is highly exceptional, at least among the sectors of industry that have already been documented (save of course the mining sectors, where specialization is given by Mother Nature); and absent comparably detailed evidence for other countries, international comparisons are not yet possible.

3. The market for naval vessels

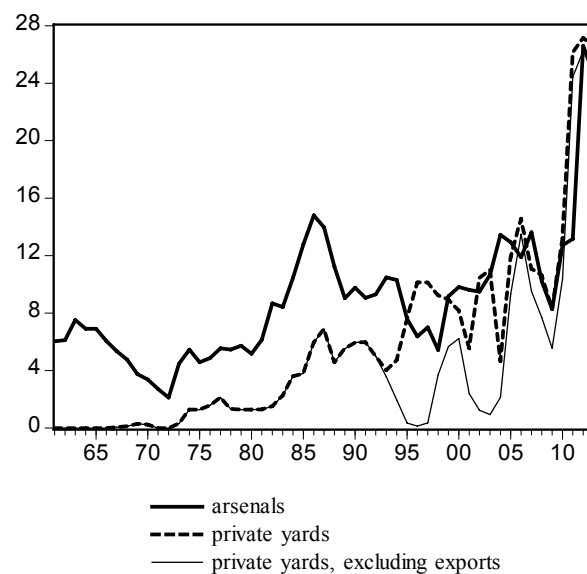
A significant strand of the contemporary debate on matters maritime concerned the pattern of naval procurement. Naval construction had traditionally been concentrated in the arsenals; the owners of shipyards naturally pressed, appar-

ently with increasing success, for a share of the work (e.g., Parlamento italiano 1882, 338-497).

Appendix Table I presents the private-yard component of naval construction in Italy's regions; it is obtained by replicating Appendix Table B, and the corresponding aggregates, with the data base restricted to the ships built in private yards, separating out exports. The arsenal-built component is not reported, but it is simply the difference between the partial series in Appendix Table I and the aggregate estimates of naval construction in Appendix Table E. The corresponding national series are the simple sums of the regional estimates, and are not separately reported.

The national series obtained by summing over the appropriate regional series are illustrated in Figure 6; exports were all from private yards, and appear as the vertical difference between private-yard production and private-yard production for the Italian Navy. Three phases can be identified. In 1861-73, the contribution of private yards was negligible or nearly so. From 1874 – even before the Old Right lost its parliamentary majority – until 1893 private yards averaged some 30% of naval construction. Over the last two decades (1894-1913), finally, the contribution of the private yards was comparable to that of the arsenals.

Figure 6: Naval ship construction in Italy:
arsenal and private-yard value added at 1911 prices (million lire)



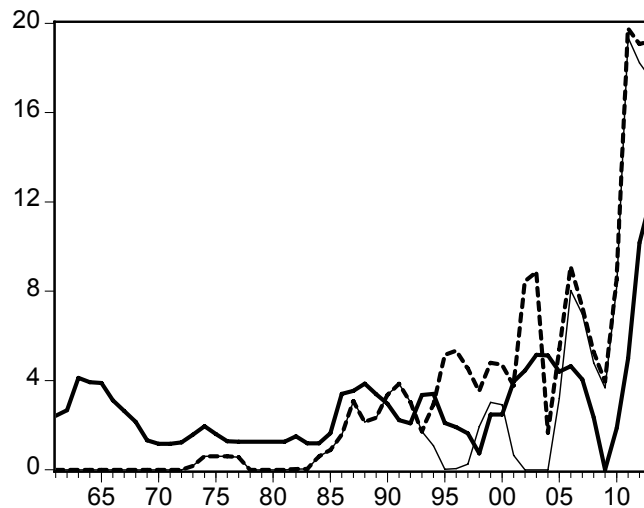
Sources: see text.

At the regional level, the mix was very different. In Venetia the arsenal accounted for all the naval work, save only a few small auxiliary vessels (6 bulk carriers and 9 tugs). In Campania, similarly, the arsenals in Naples and Castellammare accounted for some 90% of the total; the Pattison works accounted for almost all of the region's private-yard destroyers (14), torpedo boats (56), and auxiliary vessels (8). Tuscany was here almost a mirror-image of Venetia, with no arsenal work at all after the Leghorn (S. Rocco) works were taken over by Orlando.¹¹ Liguria alone combined arsenals and private yards in almost equal proportions, with both the major arsenal in La Spezia and the major Ansaldo and Odero yards in Genoa/Sampierdarena capable of producing even the largest fighting ships.¹²

The Ligurian and Tuscan series are illustrated in Figure 7, like the national series in Figure 6.

Figure 7: Naval ship construction in Liguria and Tuscany:
arsenal and private-yard value added at 1911 prices (million lire)

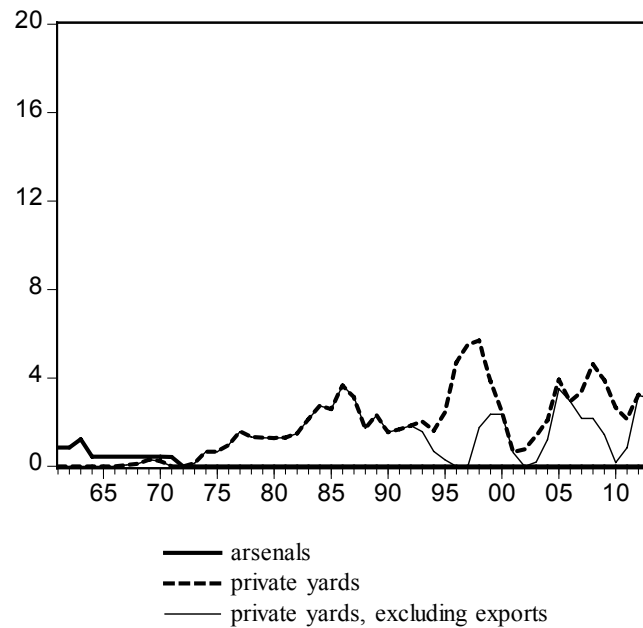
A. Liguria



¹¹ The arsenal was sold in 1866; the *Conte Verde*, then building, is here considered entirely arsenal-built.

¹² Numerous other private yards were located in Liguria, including for example the FIAT-S. Giorgio and Muggiano submarine works near La Spezia.

B. Tuscany



Sources: see text.

In both regions, from the mid-1890s, exports occasionally represented the bulk of private-yard work. Only a minor share of Italy's naval exports were ships actually laid down to foreign order; the largest batch was represented by the *Garibaldi*-class cruisers repeatedly laid down for the Italian navy and bought, while still under construction, by foreign powers (Fraccaroli A. 1970, Bagnasco E. and Rastelli A. 1991).¹³

The significance of these exports goes beyond their mere numbers, for they are directly relevant to the long-standing debate over Italy's tariff policy. Half a century ago, Gerschenkron argued that coal-less Italy should have protected

¹³ The *Garibaldi*-class *Cristóbal Colón*, delivered incomplete, was lost in the Spanish-American battle of Santiago, Cuba, July 3, 1898. The main ships not initially laid down to domestic order were the armored cruiser *Georgios Averoff* (built in Leghorn and sold to Greece), and the protected cruiser *Libia* (laid down in Genoa as the *Drama*, for Turkey, and here excluded from the export total because it was taken over by the Italian navy); two foreign battleships (the *Vasco da Gama* and the *Messoudieh*) were also rebuilt, in Leghorn and Genoa respectively. Among minor vessels, FIAT submarines in particular were both exported and built abroad to Italian design; the *Balilla*, too, had been laid down as the *U-42*, for Germany.

engineering rather than fuel-intensive metalmaking (Gerschenkron A. 1955, 368-369). One of his less obeisant students countered that the royal road to industrial development was not the conquest of the limited domestic market, but the break-out into the (“unlimited”) world market; in Italy the increase in the costs of domestic engineering products due to the tariff on iron and steel stunted industrial growth not because it increased the consumption in Italy of foreign goods, but because it priced their Italian counterparts out of world markets and prevented export-led growth (Fenoaltea S. 1973, 136-139). Gianni Toniolo in turn dismissed the suggested counterfact, arguing that Italy’s engineering industry could not have exported even with duty-free imports of steel, simply because it had not yet reached the technical, *qualitative*, level necessary to succeed in world markets (Toniolo G. 1977, 662, 665, 672, 1990, 145); and his objection has been repeated with approval by Luciano Cafagna (Cafagna L. 1989, 276-277), then by Vera Zamagni (Zamagni V. 1993, 115-116), and again by Jon Cohen and Giovanni Federico (Cohen J. S. and Federico G. 2001, 65).

In the period at hand major naval vessels were the very pinnacle of technological sophistication. Italy’s engineering firms produced them for export: whatever else they may have been, they were not too technologically backward to export at all.

Conclusion

The new evidence presented here leads to a number of novel conclusions. At the national level, shipbuilding was not, as the extant series suggest, a sector in absolute, and *a fortiori* relative, decline: if one properly measures merchant-ship construction, and counts repair work and naval construction as well, shipbuilding easily kept pace with industrial production as a whole.

The regional series point to a very high degree of concentration in a very few regions, and, in the leading region, an extensive specialization in shipbuilding itself. This degree of regional specialization is unusual among Italy’s industries; the extent to which it was also unusual with respect to shipbuilding in other countries cannot yet be determined.

Over time, private yards obtained an increasing share of naval construction, and developed a significant export business. Weapons systems embody cutting-edge technology: the conventional wisdom that Italy’s engineering industry was then too backward to produce goods that would sell on the world market seems simply wrong.

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Appendix

Appendix Table A: Shipbuilding in Italy, 1861-1913: value added at 1911 prices (million lire)

	(1)	(2)	(3)	(4)	(5)
	Construction		Maintenance		
	Merchant	Naval	Merchant	Naval	Total
1861	5.87	6.03	3.82	1.82	17.55
1862	7.61	6.11	4.02	1.78	19.52
1863	9.08	7.53	4.33	1.75	22.69
1864	11.46	6.91	4.46	1.69	24.52
1865	13.81	6.91	4.75	1.66	27.13
1866	15.26	6.06	5.17	1.70	28.19
1867	18.33	5.40	5.46	1.89	31.07
1868	21.11	4.88	5.87	2.13	33.99
1869	21.77	4.05	6.33	2.51	34.67
1870	18.61	3.61	6.78	2.46	31.46
1871	15.30	2.72	7.14	2.35	27.50
1872	14.88	2.13	7.27	2.04	26.32
1873	17.66	4.80	7.41	2.12	31.99
1874	20.93	6.74	7.63	2.18	37.49
1875	19.37	5.85	7.90	2.16	35.28
1876	13.38	6.47	8.18	2.17	30.19
1877	8.41	7.68	8.26	2.14	26.49
1878	6.24	6.79	8.24	2.23	23.49
1879	4.46	7.01	8.24	2.33	22.04
1880	3.28	6.46	8.23	2.41	20.38
1881	3.83	7.44	8.33	2.51	22.11
1882	4.28	10.19	8.56	2.52	25.56
1883	4.08	10.70	8.77	2.64	26.19
1884	3.47	14.04	8.83	2.73	29.08
1885	2.72	16.59	8.94	2.90	31.15
1886	2.11	20.78	8.71	2.98	34.57
1887	1.60	20.86	8.65	3.25	34.36
1888	2.44	15.81	8.77	3.62	30.64
1889	4.83	14.56	8.78	4.00	32.17

Table A continued...

1890	7.55	15.73	8.54	4.26	36.08
1891	6.64	15.03	9.79	4.54	36.00
1892	4.39	14.30	9.56	5.02	33.27
1893	3.16	14.52	10.08	5.58	33.34
1894	2.38	15.03	10.26	5.82	33.49
1895	2.74	15.20	10.62	5.93	34.50
1896	3.89	16.50	10.95	6.05	37.39
1897	6.61	17.13	11.53	6.19	41.46
1898	11.83	14.66	11.80	6.59	44.88
1899	19.14	18.11	12.41	6.81	56.47
1900	21.73	17.99	13.69	6.96	60.38
1901	16.78	15.17	15.24	6.90	54.10
1902	14.16	19.94	15.92	6.80	56.82
1903	11.91	21.67	15.92	6.68	56.19
1904	12.55	18.11	16.06	6.48	53.20
1905	13.84	24.85	15.54	6.43	60.66
1906	15.45	26.45	16.72	6.25	64.87
1907	15.20	24.69	17.72	6.15	63.76
1908	10.84	20.85	18.63	6.23	56.55
1909	9.87	16.57	20.04	6.42	52.90
1910	8.00	25.90	20.35	6.56	60.82
1911	8.19	39.31	20.59	6.99	75.08
1912	14.05	53.75	21.94	7.69	97.43
1913	16.41	51.12	24.39	8.44	100.35

Sources: see text.

Appendix Table B: Ship construction in Italy, 1861-1913: physical production and unit value added at 1911 prices

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)
	Merchant vessels (000 gross tons)		Naval vessels (displacement tons)												
	sail	steam	Armored frigates	Frigates, corvettes	Battle-ships	Armored cruisers	Protected cruisers	Other cruisers	De-destroyers	Subma-rines	Tor-pedo boats	Gun-boats	Tugs	Bulk-trans-ports	Other aux. vessels
weight ^a	235	325	1,000	1,350	1,000	1,000	1,350	1,550	2,000	3,800	2,800	700	700	200	450
1861	25.0	.0	2,136	2,887	0	0	0	0	0	0	0	0	0	0	0
1862	32.4	.0	2,679	2,472	0	0	0	61	0	0	0	0	0	0	0
1863	38.4	.2	4,292	2,066	0	0	0	122	0	0	0	0	0	0	582
1864	48.5	.2	3,555	1,197	0	0	0	122	0	0	0	333	71	0	2,816
1865	58.2	.4	3,657	851	0	0	0	122	0	0	0	666	132	0	3,010
1866	63.9	.7	3,999	458	0	0	0	122	0	0	0	666	74	0	1,630
1867	77.5	.4	3,659	645	0	0	0	122	0	0	0	752	58	0	253
1868	88.8	.7	2,825	833	0	0	0	122	0	0	0	909	58	0	141
1869	89.9	2.0	2,243	833	0	0	0	35	0	0	0	833	54	0	21
1870	77.3	1.4	2,243	681	0	0	0	0	0	0	0	600	37	0	0
1871	64.8	.2	2,224	146	0	0	0	0	0	0	0	257	169	0	0
1872	63.0	.2	1,796	0	0	0	0	0	0	0	0	92	380	0	0
1873	71.6	2.6	1,367	0	1,844	0	507	204	0	0	0	149	697	0	0
1874	84.3	3.5	1,197	0	2,926	0	579	823	0	0	0	149	657	0	0
1875	80.7	1.2	276	0	2,926	0	579	908	0	0	0	107	547	0	0

Table B continued...																	
1876	56.6	.2	0	0	0	3,878	0	508	1,027	0	0	0	0	33	273	212	118
1877	35.5	.2	0	0	0	5,712	0	0	1,100	0	0	0	0	0	0	346	439
1878	25.6	.7	0	0	0	5,712	0	0	598	0	0	0	0	0	0	195	252
1879	18.0	.7	0	0	0	5,712	0	410	480	0	0	0	0	0	0	27	0
1880	13.2	.5	0	0	0	4,041	0	1,644	130	0	0	0	0	0	0	0	0
1881	13.9	1.7	0	0	0	4,804	0	1,940	0	0	0	5	0	0	0	0	0
1882	16.0	1.6	0	0	0	7,332	0	1,940	0	0	0	29	216	0	0	0	23
1883	15.1	1.6	0	0	0	7,018	0	2,266	0	40	0	83	432	0	0	0	30
1884	12.3	1.8	0	0	0	8,694	0	2,759	209	146	0	200	432	44	525	24	24
1885	10.9	.5	0	0	0	9,629	0	2,606	1,029	212	0	288	348	96	1,060	218	218
1886	8.5	.3	0	0	0	9,685	0	3,360	2,263	212	0	710	434	106	548	327	327
1887	5.2	1.2	0	0	0	9,204	0	3,300	1,817	118	0	1,226	610	150	189	319	319
1888	8.2	1.6	0	0	0	8,274	0	1,525	1,464	12	0	826	610	158	562	492	492
1889	19.3	.9	0	0	0	5,799	0	2,320	1,890	0	6	608	434	380	813	530	530
1890	25.9	4.5	0	0	0	5,355	1,008	2,468	1,653	0	38	944	130	620	421	177	177
1891	20.0	6.0	0	0	0	4,761	1,008	2,909	1,235	0	38	917	204	694	179	88	88
1892	15.4	2.4	0	0	0	4,170	1,113	3,312	1,348	0	13	618	407	362	691	0	0
1893	10.9	1.9	0	0	0	3,801	3,505	3,191	830	0	0	363	407	150	1,077	0	0
1894	5.7	3.2	0	0	0	4,617	4,937	2,910	378	0	0	236	204	30	698	0	0
1895	4.4	5.2	0	0	0	3,320	8,893	1,728	356	0	0	26	0	0	135	0	0
1896	3.5	9.4	0	0	0	2,736	11,597	1,284	171	0	0	23	20	0	443	0	0
1897	4.3	17.2	0	0	0	2,736	11,690	827	775	41	0	63	40	0	501	0	0
1898	6.5	31.7	0	0	0	3,045	9,167	333	933	91	0	86	153	0	80	0	0

Table B continued...																
1899	8.8	52.5	0	0	7,083	8,250	333	849	224	0	122	265	31	65	0	0
1900	8.8	60.5	0	0	7,255	7,804	333	572	460	0	131	152	267	85	0	0
1901	15.4	40.5	0	0	10,490	3,241	138	0	433	0	36	40	361	43	0	0
1902	26.4	24.5	0	0	11,294	7,147	0	0	481	0	82	40	403	0	0	0
1903	19.1	22.8	0	0	10,060	9,636	0	0	312	28	166	640	207	949	0	0
1904	8.2	32.6	0	0	11,629	1,568	0	0	188	153	548	1,620	40	6,277	0	0
1905	7.8	36.9	0	0	10,225	4,813	0	0	491	223	1,900	1,400	40	8,267	0	0
1906	8.9	41.1	0	0	8,866	6,582	0	0	1,340	188	2,320	390	106	3,839	0	0
1907	9.1	40.2	0	0	8,293	10,431	330	0	959	268	875	0	186	0	0	0
1908	7.8	27.7	0	0	5,168	11,660	661	0	545	293	261	132	139	32	0	0
1909	6.7	25.5	0	0	3,138	10,143	826	0	545	120	159	98	141	64	0	0
1910	6.0	20.2	0	0	12,991	6,096	1,973	0	545	379	462	0	274	674	0	0
1911	5.2	21.4	0	0	22,352	1,449	2,320	0	1,225	1,080	1,738	429	747	643	0	0
1912	6.9	38.3	0	0	32,592	0	3,927	0	2,790	1,305	1,531	448	1,019	0	0	0
1913	9.1	43.9	0	0	30,065	0	3,486	839	3,306	1,191	763	0	1,032	1,776	1,544	0

^avalue added at 1911 prices; cols. 1-2, lire/gross ton; cols. 3-15, lire/displacement ton.

Sources: see text.

Appendix Table C: Estimated fleets and maintenance in Italy, 1861-1913

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	Estimated mid-year merchant fleet (thousand register tons)			Naval fleet maintained ^a	Value added in merchant-fleet maintenance (million 1911 lire)		
	sail-pow.	engine-powered			sail-powered	engine-powered	
	(net t.)	(net t.)	(gross t.)			dry-dock	other
1861	517	3		60.8	3.61	.17	.04
1862	531	8		59.4	3.68	.23	.11
1863	545	14		58.2	3.88	.26	.19
1864	559	19		56.2	3.92	.28	.26
1865	605	21		55.2	4.19	.27	.29
1866	660	22		56.8	4.57	.30	.30
1867	704	23		62.9	4.86	.29	.31
1868	759	23		71.7	5.26	.30	.31
1869	816	24		84.6	5.65	.35	.33
1870	867	29		82.1	6.01	.37	.40
1871	902	35		78.2	6.24	.42	.48
1872	913	38		68.1	6.27	.48	.52
1873	910	44		70.6	6.27	.54	.60
1874	913	51		72.7	6.30	.63	.70
1875	931	55		71.9	6.47	.68	.75
1876	963	58		72.3	6.69	.70	.79
1877	976	58		71.4	6.74	.73	.79
1878	967	59		74.2	6.72	.72	.80
1879	948	63		76.9	6.57	.81	.86
1880	928	68		80.3	6.39	.91	.93
1881	909	78		82.8	6.27	1.00	1.06
1882	890	91		84.1	6.16	1.16	1.24
1883	876	102	166	87.8	6.05	1.33	1.39
1884	858	115	187	91.0	5.94	1.32	1.57
1885	839	124	200	96.6	5.81	1.45	1.68
1886	815	135	216	99.4	5.63	1.27	1.81
1887	767	154	247	107.4	5.28	1.30	2.07
1888	715	169	271	120.6	4.94	1.56	2.27
1889	670	181	286	131.9	4.64	1.74	2.40
1890	638	187	295	141.9	4.38	1.69	2.47
1891	630	194	309	151.5	4.34	2.86	2.59
1892	618	201	320	168.9	4.22	2.66	2.68
1893	599	205	326	184.0	4.10	3.25	2.73
1894	580	208	330	194.1	3.94	3.56	2.76
1895	564	215	340	195.8	3.84	3.93	2.85
1896	542	230	365	199.8	3.69	4.20	3.06
1897	528	249	398	206.4	3.58	4.62	3.33
1898	533	269	430	219.6	3.62	4.58	3.60
1899	548	297	476	227.0	3.73	4.69	3.99
1900	563	346	552	229.7	3.84	5.23	4.62
1901	572	401	634	230.1	3.89	6.04	5.31
1902	573	437	690	226.6	3.90	6.24	5.78
1903	577	455	717	222.8	3.92	6.00	6.00
1904	577	462	727	216.1	3.92	6.05	6.09
1905	556	473	743	214.3	3.78	5.53	6.22
1906	532	499	802	208.3	3.61	6.39	6.72
1907	512	531	872	205.0	3.46	6.96	7.30
1908	496	569	935	207.5	3.34	7.46	7.83

Table C continued...							
1909	485	622	1,026	211.9	3.27	8.18	8.59
1910	477	676	1,114	218.7	3.21	7.81	9.33
1911	462	709	1,164	233.1	3.11	7.73	9.75
1912	433	754	1,236	256.4	2.89	8.70	10.35
1913	406	844	1,383	281.4	2.70	10.11	11.58

^athousand equivalent displacement tons.

Sources: see text.

Key to Appendix Tables D-I: Italy's regions



Appendix Table D: Merchant ship construction in Italy's regions, 1861-1913: value added at 1911 prices (million lire)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
	Pied- mont	Liguria	Lom- bardy	Venecia	Emilia	Tuscany	Marches	Umbria	Latum	Abruzzi	Campa- nia	Apulia	Basilica- ta	Calabria	Sicily	Sardinia
1861	.00	3.16	.00	.19	.05	.37	.08	.00	.00	.04	1.64	.10	.00	.03	.20	.00
1862	.00	4.62	.00	.19	.06	.54	.11	.00	.00	.03	1.68	.14	.00	.04	.20	.01
1863	.00	6.13	.00	.12	.05	.57	.11	.00	.00	.02	1.78	.12	.00	.03	.15	.01
1864	.00	8.13	.00	.26	.03	.45	.09	.00	.00	.01	2.20	.09	.00	.03	.17	.01
1865	.00	10.26	.00	.31	.02	.50	.08	.00	.00	.00	2.24	.11	.00	.04	.23	.02
1866	.00	11.50	.00	.45	.01	.49	.05	.00	.00	.01	2.39	.11	.00	.03	.20	.01
1867	.00	13.93	.00	.50	.02	.44	.02	.00	.00	.00	3.10	.08	.00	.03	.19	.01
1868	.00	16.92	.00	.54	.01	.40	.01	.00	.00	.01	2.83	.10	.00	.04	.22	.02
1869	.00	17.71	.00	.60	.01	.31	.02	.00	.00	.01	2.71	.10	.00	.04	.23	.02
1870	.00	14.85	.00	.48	.02	.22	.03	.00	.00	.00	2.68	.08	.00	.03	.20	.01
1871	.00	11.68	.00	.64	.05	.21	.04	.00	.00	.01	2.34	.07	.00	.04	.21	.01
1872	.00	11.11	.00	.50	.12	.28	.05	.00	.00	.01	2.45	.05	.00	.03	.28	.02
1873	.00	13.36	.00	.43	.12	.64	.05	.00	.00	.02	2.73	.04	.00	.03	.24	.01
1874	.00	15.48	.00	.46	.07	.97	.04	.00	.00	.01	3.68	.03	.00	.03	.17	.00
1875	.00	13.67	.00	.35	.05	.61	.02	.00	.00	.00	4.37	.05	.00	.02	.23	.00
1876	.00	9.19	.00	.38	.02	.17	.04	.00	.00	.00	3.22	.07	.00	.02	.19	.08
1877	.00	5.55	.00	.29	.01	.12	.12	.00	.00	.00	2.06	.06	.00	.02	.10	.08
1878	.00	3.40	.00	.24	.02	.26	.10	.00	.00	.00	2.03	.07	.00	.03	.08	.00

Table D continued...

1879	.00	2.27	.00	.23	.02	.31	.03	.00	.01	.00	1.34	.07	.00	.01	.17	.01
1880	.00	1.87	.00	.17	.02	.22	.04	.00	.02	.00	.67	.06	.00	.01	.20	.01
1881	.00	2.15	.00	.18	.01	.61	.05	.00	.01	.00	.61	.06	.00	.01	.12	.00
1882	.00	2.72	.00	.18	.01	.59	.05	.00	.00	.00	.56	.05	.00	.02	.08	.01
1883	.00	2.88	.00	.18	.01	.22	.03	.00	.00	.00	.62	.03	.00	.02	.09	.01
1884	.00	2.01	.00	.22	.01	.31	.03	.00	.00	.00	.72	.03	.00	.03	.10	.00
1885	.00	.92	.00	.23	.01	.37	.05	.00	.00	.00	.95	.03	.00	.03	.12	.00
1886	.00	.52	.00	.20	.01	.33	.05	.00	.00	.00	.80	.03	.00	.02	.15	.00
1887	.00	.54	.00	.17	.00	.31	.04	.00	.00	.00	.32	.03	.00	.02	.16	.00
1888	.00	1.33	.00	.18	.02	.30	.02	.00	.00	.00	.36	.05	.00	.01	.17	.00
1889	.00	3.33	.00	.19	.02	.28	.03	.00	.00	.00	.81	.06	.00	.01	.08	.01
1890	.00	5.67	.00	.22	.01	.31	.05	.00	.00	.00	1.09	.07	.00	.03	.08	.01
1891	.00	4.74	.00	.30	.02	.30	.05	.00	.00	.00	.93	.09	.00	.03	.17	.01
1892	.00	2.49	.00	.40	.03	.25	.06	.00	.00	.00	.93	.08	.00	.01	.13	.01
1893	.00	1.76	.00	.31	.03	.15	.06	.00	.00	.00	.65	.08	.00	.01	.11	.01
1894	.00	1.32	.00	.14	.03	.25	.06	.00	.00	.00	.34	.10	.00	.01	.11	.01
1895	.00	1.39	.00	.12	.03	.55	.07	.00	.00	.00	.39	.10	.00	.01	.07	.01
1896	.00	2.85	.00	.09	.03	.37	.08	.00	.00	.00	.34	.06	.00	.01	.06	.01
1897	.00	5.25	.00	.08	.01	.69	.06	.00	.00	.00	.41	.04	.00	.00	.04	.01
1898	.00	10.14	.00	.08	.01	.79	.05	.00	.00	.00	.67	.04	.00	.00	.03	.01
1899	.00	15.43	.00	.10	.03	2.42	.08	.00	.00	.00	.97	.04	.00	.01	.06	.01
1900	.00	16.40	.00	.13	.04	3.32	.74	.00	.00	.00	1.01	.04	.00	.01	.06	.00

Table D continued...															
1901	.00	13.06	.00	.17	.03	1.37	.89	.00	.00	.00	.00	1.19	.03	.00	.00
1902	.00	9.26	.00	.33	.04	1.31	1.41	.00	.00	.00	.00	1.68	.04	.00	.02
1903	.00	5.65	.00	.32	.05	1.13	1.34	.00	.00	.00	.00	1.25	.05	.00	.01
1904	.00	8.03	.00	.19	.04	.35	1.02	.00	.00	.00	.00	.73	.05	.00	.00
1905	.00	9.41	.00	.18	.05	.41	1.71	.00	.00	.00	.00	.81	.12	.00	.00
1906	.00	9.05	.00	.23	.07	.43	2.19	.00	.00	.00	.00	.91	.16	.00	.00
1907	.00	9.50	.00	.40	.05	.41	1.41	.00	.00	.00	.00	1.06	.12	.00	.00
1908	.00	5.03	.00	.52	.07	.44	.09	.00	.00	.00	.00	1.09	.08	.00	.00
1909	.00	3.92	.00	.36	.10	.73	.58	.00	.00	.00	.00	.89	.07	.00	.00
1910	.00	4.19	.00	.21	.09	.61	1.51	.00	.00	.00	.00	.69	.10	.00	.00
1911	.00	4.37	.00	.19	.09	.53	1.39	.00	.00	.00	.00	.63	.10	.00	.00
1912	.00	8.15	.00	.21	.12	1.14	1.66	.00	.00	.00	.00	.81	.11	.00	.00
1913	.00	10.69	.00	.25	.10	1.10	2.22	.00	.00	.00	.00	.98	.10	.00	.00

Sources: see text.

Appendix Table E: Naval ship construction in Italy's regions, 1861-1913: value added at 1911 prices (million lire)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
	Pied- mont	Liguria	Lom- bardy	Venetia	Emilia	Tuscany	Marches	Umbria	Lazio	Abruzzi	Cam- pania	Apulia	Basilica- ta	Calabria	Sicily	Sardinia
1861	.00	2.42	.00	.00	.00	.85	.00	.00	.00	.00	2.76	.00	.00	.00	.00	.00
1862	.00	2.67	.00	.00	.00	.85	.00	.00	.00	.00	2.59	.00	.00	.00	.00	.00
1863	.00	4.2	.00	.00	.00	1.23	.00	.00	.00	.00	2.18	.00	.00	.00	.00	.00
1864	.00	3.92	.00	.00	.00	.45	.05	.00	.00	.00	2.49	.00	.00	.00	.00	.00
1865	.00	3.89	.00	.00	.00	.45	.09	.00	.00	.00	2.48	.00	.00	.00	.00	.00
1866	.00	3.12	.00	.00	.00	.45	.05	.00	.00	.00	2.44	.00	.00	.00	.00	.00
1867	.00	2.64	.00	.42	.00	.51	.04	.00	.00	.00	1.79	.00	.00	.00	.00	.00
1868	.00	2.15	.00	.68	.00	.57	.04	.00	.00	.00	1.45	.00	.00	.00	.00	.00
1869	.00	1.33	.00	.69	.00	.75	.02	.00	.00	.00	1.26	.00	.00	.00	.00	.00
1870	.00	1.17	.00	.70	.00	.69	.00	.00	.00	.00	1.05	.00	.00	.00	.00	.00
1871	.00	1.17	.00	.31	.00	.43	.00	.00	.00	.00	.81	.00	.00	.00	.00	.00
1872	.00	1.23	.00	.12	.00	.00	.00	.00	.00	.00	.77	.00	.00	.00	.00	.00
1873	.00	1.75	.00	.79	.00	.14	.00	.00	.00	.00	2.12	.00	.00	.00	.00	.00
1874	.00	2.56	.00	.86	.00	.67	.00	.00	.00	.00	2.66	.00	.00	.00	.00	.00
1875	.00	2.21	.00	.91	.00	.67	.00	.00	.00	.00	2.05	.00	.00	.00	.00	.00
1876	.00	1.89	.00	1.05	.00	.98	.00	.00	.00	.00	2.55	.00	.00	.00	.00	.00
1877	.00	1.81	.00	1.12	.00	1.57	.00	.00	.00	.00	3.17	.00	.00	.00	.00	.00
1878	.00	1.25	.00	1.04	.00	1.32	.00	.00	.00	.00	3.17	.00	.00	.00	.00	.00
1879	.00	1.25	.00	.78	.00	1.29	.00	.00	.00	.00	3.69	.00	.00	.00	.00	.00

Table E continued...																
1880	.00	1.25	.00	.98	.00	1.28	.00	.00	.00	.00	.00	.00	2.95	.00	.00	.00
1881	.00	1.25	.00	.90	.00	1.30	.00	.00	.00	.00	.00	.00	3.98	.00	.00	.00
1882	.00	1.53	.00	2.30	.00	1.49	.00	.00	.00	.00	.00	.00	4.88	.00	.00	.00
1883	.00	1.22	.00	2.30	.00	2.14	.00	.00	.00	.00	.00	.00	5.05	.00	.00	.00
1884	.00	1.78	.00	3.47	.00	2.74	.00	.00	.00	.00	.00	.00	6.05	.00	.00	.00
1885	.00	2.53	.00	4.56	.00	2.59	.00	.00	.00	.00	.00	.00	6.91	.00	.00	.00
1886	.00	4.96	.00	5.48	.00	3.66	.00	.00	.00	.00	.00	.00	6.68	.00	.00	.00
1887	.00	6.61	.00	5.63	.00	3.13	.00	.00	.00	.00	.00	.00	5.49	.00	.00	.00
1888	.00	6.01	.00	3.98	.00	1.72	.00	.00	.00	.00	.00	.00	4.10	.00	.00	.00
1889	.00	5.72	.00	2.12	.00	2.32	.00	.00	.00	.00	.00	.00	4.39	.00	.00	.00
1890	.00	6.32	.00	1.80	.00	1.54	.00	.00	.00	.00	.00	.00	6.08	.00	.00	.00
1891	.00	6.07	.00	2.21	.00	1.67	.01	.00	.00	.00	.00	.00	5.07	.00	.00	.00
1892	.00	5.12	.00	2.35	.00	1.84	.02	.00	.00	.00	.00	.00	4.97	.00	.00	.00
1893	.00	5.06	.00	2.35	.00	2.03	.03	.00	.00	.00	.00	.00	4.96	.09	.00	.00
1894	.00	6.32	.00	2.72	.00	1.61	.02	.00	.00	.00	.00	.00	3.91	.45	.00	.00
1895	.00	7.24	.00	1.95	.00	2.44	.00	.00	.00	.00	.00	.00	3.12	.45	.00	.00
1896	.00	7.25	.00	1.51	.00	4.70	.00	.00	.00	.00	.00	.00	2.59	.45	.00	.00
1897	.00	6.16	.00	1.50	.00	5.49	.00	.00	.00	.00	.00	.00	3.53	.45	.00	.00
1898	.00	4.27	.00	1.50	.00	5.69	.00	.00	.00	.00	.00	.00	2.74	.45	.00	.00
1899	.00	7.27	.00	1.98	.00	3.86	.00	.00	.00	.00	.00	.00	4.55	.45	.00	.00
1900	.00	7.18	.00	2.78	.00	2.51	.00	.00	.00	.00	.00	.00	5.08	.45	.00	.00
1901	.00	7.74	.00	1.42	.00	.65	.00	.00	.00	.00	.00	.00	5.18	.19	.00	.00

Table E continued...														
1902	.00	12.88	.00	1.31	.00	.77	.00	.00	.00	.00	.00	4.98	.00	.00
1903	.00	14.04	.00	1.37	.00	1.38	.00	.00	.00	.00	.00	4.89	.00	.00
1904	.00	6.79	.00	1.83	.00	2.08	.00	.00	.00	.00	.00	7.41	.00	.00
1905	.00	9.79	.00	1.69	.00	3.93	.00	.00	.00	.00	.00	9.44	.00	.00
1906	.00	13.74	.00	.71	.00	2.93	.00	.00	.00	.00	.00	9.06	.00	.00
1907	.00	11.35	.00	.43	.00	3.39	.00	.00	.00	.00	.00	9.52	.00	.00
1908	.00	7.63	.00	.35	.00	4.62	.00	.00	.00	.00	.00	8.23	.02	.00
1909	.00	3.96	.00	.43	.00	3.90	.00	.00	.00	.00	.00	8.24	.03	.00
1910	.00	10.40	.00	1.78	.00	2.66	.00	.00	.00	.00	.00	11.02	.03	.00
1911	.00	24.75	.00	2.18	.00	2.14	.00	.00	.00	.00	.00	9.91	.02	.00
1912	.00	29.24	.00	1.68	.00	3.24	.00	.00	.00	.00	.00	19.28	.00	.31
1913	.00	31.37	.00	.90	.00	3.10	.00	.00	.00	.00	.00	15.75	.00	.00

Sources: see text.

Appendix Table F: Merchant ship maintenance in Italy's regions, 1861-1913: value added at 1911 prices (million lire)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
	Pied- mont	Liguria	Lom- bardy	Venetia	Emilia	Tuscany	Marches	Umbria	Lazio	Abruzzi	Campe- nia	Apulia	Basilica- ta	Calabria	Sicily	Sardinia
1861	.00	1.49	.00	.21	.02	.28	.08	.00	.01	.04	1.19	.12	.00	.02	.34	.01
1862	.00	1.59	.00	.22	.02	.29	.09	.00	.01	.04	1.22	.12	.00	.02	.38	.01
1863	.00	1.73	.00	.23	.03	.31	.10	.00	.01	.05	1.30	.13	.00	.03	.42	.02
1864	.00	1.92	.00	.23	.03	.30	.10	.00	.01	.05	1.20	.12	.00	.03	.45	.02
1865	.00	2.17	.00	.25	.03	.31	.11	.00	.01	.05	1.16	.13	.00	.04	.47	.02
1866	.00	2.51	.00	.27	.03	.33	.12	.00	.01	.06	1.13	.14	.00	.04	.51	.02
1867	.00	2.80	.00	.29	.03	.34	.13	.00	.01	.06	1.05	.14	.00	.05	.54	.02
1868	.00	3.15	.00	.30	.03	.35	.12	.00	.01	.05	1.08	.14	.00	.05	.55	.02
1869	.00	3.56	.00	.30	.03	.36	.11	.00	.01	.05	1.10	.14	.00	.05	.59	.02
1870	.00	3.99	.00	.31	.03	.36	.10	.00	.01	.04	1.11	.14	.00	.05	.62	.02
1871	.00	4.38	.00	.31	.03	.35	.08	.00	.02	.03	1.09	.13	.00	.05	.65	.02
1872	.00	4.48	.00	.30	.03	.36	.08	.00	.02	.03	1.08	.13	.00	.05	.70	.02
1873	.00	4.59	.00	.29	.03	.36	.07	.00	.02	.03	1.07	.12	.00	.05	.76	.02
1874	.00	4.74	.00	.28	.03	.37	.07	.00	.02	.03	1.06	.12	.00	.05	.85	.02
1875	.00	4.93	.00	.27	.03	.38	.07	.00	.02	.03	1.07	.12	.00	.05	.92	.03
1876	.00	5.10	.00	.27	.03	.39	.06	.00	.02	.03	1.13	.11	.00	.05	.95	.03
1877	.00	5.14	.00	.26	.03	.40	.06	.00	.02	.02	1.17	.11	.00	.05	.97	.03
1878	.00	5.13	.00	.25	.03	.39	.05	.00	.02	.02	1.20	.10	.00	.05	.97	.03
1879	.00	5.11	.00	.24	.03	.39	.05	.00	.02	.02	1.20	.10	.00	.04	1.02	.03
1880	.00	5.09	.00	.25	.03	.39	.05	.00	.02	.02	1.18	.10	.00	.04	1.04	.02

Table F continued...																
1881	.00	5.15	.00	.26	.03	.40	.04	.00	.02	.02	1.17	.10	.00	.04	1.08	.02
1882	.00	5.29	.00	.29	.02	.41	.04	.00	.03	.01	1.16	.10	.00	.04	1.14	.02
1883	.00	5.42	.00	.32	.03	.41	.04	.00	.03	.01	1.16	.10	.00	.04	1.19	.02
1884	.00	5.36	.00	.35	.03	.42	.04	.00	.04	.01	1.16	.11	.00	.04	1.25	.02
1885	.00	5.32	.00	.39	.03	.43	.03	.00	.04	.01	1.17	.12	.00	.04	1.33	.02
1886	.00	5.05	.00	.40	.02	.42	.03	.00	.05	.01	1.16	.13	.00	.04	1.39	.02
1887	.00	5.00	.00	.40	.02	.38	.03	.00	.05	.01	1.11	.14	.00	.04	1.45	.02
1888	.00	4.99	.00	.40	.02	.39	.03	.00	.04	.01	1.10	.15	.00	.04	1.58	.02
1889	.00	5.04	.00	.41	.02	.34	.03	.00	.04	.01	1.10	.16	.00	.03	1.59	.02
1890	.00	4.84	.00	.43	.02	.32	.03	.00	.03	.01	1.10	.17	.00	.03	1.56	.01
1891	.00	4.98	.00	.45	.02	1.34	.03	.00	.03	.01	1.14	.18	.00	.03	1.57	.01
1892	.00	5.56	.00	.45	.03	.61	.03	.00	.02	.01	1.12	.19	.00	.03	1.52	.01
1893	.00	6.32	.00	.44	.03	.36	.03	.00	.02	.01	1.08	.19	.00	.02	1.57	.01
1894	.00	6.55	.00	.43	.03	.38	.03	.00	.01	.01	1.04	.19	.00	.02	1.55	.01
1895	.00	6.90	.00	.42	.03	.42	.03	.00	.01	.01	1.01	.20	.00	.02	1.56	.01
1896	.00	7.28	.00	.42	.03	.34	.03	.00	.01	.01	.98	.20	.00	.02	1.62	.02
1897	.00	7.86	.00	.42	.03	.38	.03	.00	.01	.01	.97	.20	.00	.02	1.60	.02
1898	.00	8.06	.00	.42	.03	.44	.03	.00	.01	.01	.99	.20	.00	.01	1.58	.02
1899	.00	8.34	.00	.43	.03	.47	.03	.00	.01	.01	1.03	.21	.00	.01	1.81	.03
1900	.00	9.33	.00	.48	.03	.57	.03	.00	.01	.01	1.10	.22	.00	.01	1.86	.03
1901	.00	10.48	.00	.54	.03	.48	.04	.00	.01	.01	1.17	.24	.00	.02	2.20	.03
1902	.00	10.90	.00	.56	.03	.45	.04	.00	.01	.01	1.23	.25	.00	.02	2.39	.03
1903	.00	10.86	.00	.39	.03	.62	.04	.00	.02	.01	1.28	.25	.00	.02	2.37	.03
1904	.00	11.01	.00	.57	.04	.45	.05	.00	.02	.01	1.29	.25	.00	.02	2.32	.03

Table F continued...

1905	.00	10.57	.00	.61	.04	.46	.05	.00	.02	.01	1.26	.25	.00	.02	2.20	.03
1906	.00	11.60	.00	.68	.04	.73	.05	.00	.02	.01	1.26	.26	.00	.02	2.02	.03
1907	.00	12.01	.00	.74	.05	.72	.05	.00	.02	.01	1.27	.27	.00	.02	2.53	.03
1908	.00	12.90	.00	.68	.05	.67	.05	.00	.03	.01	1.19	.28	.00	.02	2.70	.03
1909	.00	14.22	.00	.70	.05	.66	.06	.00	.04	.01	1.29	.30	.00	.02	2.68	.04
1910	.00	14.60	.00	.49	.05	.70	.06	.00	.04	.02	1.33	.31	.00	.01	2.70	.04
1911	.00	14.84	.00	.48	.05	.61	.07	.00	.05	.02	1.45	.31	.00	.01	2.65	.04
1912	.00	14.71	.00	.50	.05	.62	.07	.00	.05	.03	2.67	.32	.00	.01	2.88	.04
1913	.00	16.87	.00	.54	.05	.67	.07	.00	.06	.03	2.60	.35	.00	.01	3.10	.04

Sources: see text.

Appendix Table G: Naval ship maintenance in Italy's regions, 1861-1913: value added at 1911 prices (million lire)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
	Pied- mont	Liguria	Lom- bardy	Venetia	Emilia	Tuscany	Marches	Umbria	Lazio	Abruzzi	Campa- nia	Apulia	Basilica- ta	Calabria	Sicily	Sardinia
1861	.00	.73	.00	.00	.00	.15	.02	.00	.00	.00	.93	.00	.00	.00	.00	.00
1862	.00	.71	.00	.00	.00	.14	.02	.00	.00	.00	.91	.00	.00	.00	.00	.00
1863	.00	.70	.00	.00	.00	.14	.02	.00	.00	.00	.89	.00	.00	.00	.00	.00
1864	.00	.67	.00	.00	.00	.14	.02	.00	.00	.00	.86	.00	.00	.00	.00	.00
1865	.00	.66	.00	.00	.00	.13	.02	.00	.00	.00	.85	.00	.00	.00	.00	.00
1866	.00	.72	.00	.00	.00	.07	.02	.00	.00	.00	.90	.00	.00	.00	.00	.00
1867	.00	.66	.00	.38	.00	.00	.02	.00	.00	.00	.83	.00	.00	.00	.00	.00
1868	.00	.75	.00	.43	.00	.00	.00	.00	.00	.00	.95	.00	.00	.00	.00	.00
1869	.00	.89	.00	.51	.00	.00	.00	.00	.00	.00	1.12	.00	.00	.00	.00	.00
1870	.00	.89	.00	.49	.00	.00	.00	.00	.00	.00	1.08	.00	.00	.00	.00	.00
1871	.00	.85	.00	.47	.00	.00	.00	.00	.00	.00	1.03	.00	.00	.00	.00	.00
1872	.00	.80	.00	.37	.00	.00	.00	.00	.00	.00	.88	.00	.00	.00	.00	.00
1873	.00	.89	.00	.36	.00	.00	.00	.00	.00	.00	.87	.00	.00	.00	.00	.00
1874	.00	1.00	.00	.35	.00	.00	.00	.00	.00	.00	.83	.00	.00	.00	.00	.00
1875	.00	1.06	.00	.32	.00	.00	.00	.00	.00	.00	.78	.00	.00	.00	.00	.00
1876	.00	1.15	.00	.30	.00	.00	.00	.00	.00	.00	.72	.00	.00	.00	.00	.00
1877	.00	1.20	.00	.28	.00	.00	.00	.00	.00	.00	.66	.00	.00	.00	.00	.00
1878	.00	1.22	.00	.38	.00	.00	.00	.00	.00	.00	.62	.00	.00	.00	.00	.00
1879	.00	1.25	.00	.41	.00	.00	.00	.00	.00	.00	.67	.00	.00	.00	.00	.00
1880	.00	1.28	.00	.43	.00	.00	.00	.00	.00	.00	.70	.00	.00	.00	.00	.00
1881	.00	1.29	.00	.47	.00	.00	.00	.00	.00	.00	.75	.00	.00	.00	.00	.00

Table G continued...																	
1882	.00	1.29	.00	.48	.00	.00	.00	.00	.00	.00	.00	.00	.76	.00	.00	.00	.00
1883	.00	1.29	.00	.53	.00	.00	.00	.00	.00	.00	.00	.00	.82	.00	.00	.00	.00
1884	.00	1.31	.00	.55	.00	.00	.00	.00	.00	.00	.00	.00	.87	.00	.00	.00	.00
1885	.00	1.36	.00	.61	.00	.00	.00	.00	.00	.00	.00	.00	.93	.00	.00	.00	.00
1886	.00	1.37	.00	.63	.00	.00	.00	.00	.00	.00	.00	.00	.98	.00	.00	.00	.00
1887	.00	1.45	.00	.71	.00	.00	.00	.00	.00	.00	.00	.00	1.10	.00	.00	.00	.00
1888	.00	1.59	.00	.80	.00	.00	.00	.00	.00	.00	.00	.00	1.23	.00	.00	.00	.00
1889	.00	1.70	.00	.91	.00	.00	.00	.00	.00	.00	.00	.00	1.39	.00	.00	.00	.00
1890	.00	1.75	.00	.98	.00	.00	.00	.00	.00	.00	.00	.00	1.49	.04	.00	.00	.00
1891	.00	1.86	.00	1.04	.00	.00	.00	.00	.00	.00	.00	.00	1.59	.05	.00	.00	.00
1892	.00	2.0	.00	1.12	.00	.00	.00	.00	.00	.00	.00	.00	1.72	.15	.00	.00	.00
1893	.00	2.21	.00	1.21	.00	.00	.00	.00	.00	.00	.00	.00	1.82	.28	.00	.00	.05
1894	.00	2.27	.00	1.22	.00	.00	.00	.00	.00	.00	.00	.00	1.86	.41	.00	.00	.06
1895	.00	2.29	.00	1.23	.00	.00	.00	.00	.00	.00	.00	.00	1.88	.47	.00	.00	.06
1896	.00	2.28	.00	1.20	.00	.00	.00	.00	.00	.00	.00	.00	1.92	.60	.00	.00	.06
1897	.00	2.35	.00	1.24	.00	.00	.00	.00	.00	.00	.00	.00	1.92	.62	.00	.00	.06
1898	.00	2.50	.00	1.32	.00	.00	.00	.00	.00	.00	.00	.00	2.04	.66	.00	.00	.07
1899	.00	2.59	.00	1.29	.00	.00	.00	.00	.00	.00	.00	.00	2.18	.68	.00	.00	.07
1900	.00	2.62	.00	1.38	.00	.00	.00	.00	.00	.00	.00	.00	2.20	.69	.00	.00	.07
1901	.00	2.62	.00	1.31	.00	.00	.00	.00	.00	.00	.00	.00	2.21	.69	.00	.00	.07
1902	.00	2.58	.00	1.29	.00	.00	.00	.00	.00	.00	.00	.00	2.17	.68	.00	.00	.07
1903	.00	2.47	.00	1.27	.00	.00	.00	.00	.00	.00	.00	.00	2.14	.74	.00	.00	.07
1904	.00	2.40	.00	1.23	.00	.00	.00	.00	.00	.00	.00	.00	2.08	.71	.00	.00	.06
1905	.00	2.38	.00	1.22	.00	.00	.00	.00	.00	.00	.00	.00	2.06	.71	.00	.00	.06
1906	.00	2.31	.00	1.19	.00	.00	.00	.00	.00	.00	.00	.00	2.06	.63	.00	.00	.06

1907	.00	2.28	.00	1.11	.00	.00	.00	.00	.68	.00	.00	.06
1908	.00	2.30	.00	1.12	.00	.00	.00	.00	.69	.00	.00	.06
1909	.00	2.35	.00	1.14	.00	.00	.00	.00	.70	.00	.00	.06
1910	.00	2.43	.00	1.12	.00	.00	.00	.00	.72	.00	.00	.07
1911	.00	2.59	.00	1.19	.00	.00	.00	.00	.77	.00	.00	.07
1912	.00	2.92	.00	1.23	.00	.00	.00	.00	.85	.00	.00	.08
1913	.00	3.12	.00	1.35	.00	.00	.00	.00	1.01	.00	.00	.08

Sources: see text.

Appendix Table H: Shipbuilding in Italy's regions, 1861-1913: value added at 1911 prices (million lire)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
	Pied- mont	Liguria	Lom- bardy	Varecia	Emilia	Tuscany	Marches	Umbria	Lazio	Abuzzi	Campania	Apulia	Basilica- ta	Calabria	Sicily	Sardinia
1861	.00	7.80	.00	.41	.07	1.64	.19	.00	.01	.08	6.52	.21	.00	.05	.54	.02
1862	.00	9.59	.00	.41	.09	1.82	.22	.00	.01	.07	6.40	.26	.00	.06	.58	.02
1863	.00	12.68	.00	.35	.08	2.24	.22	.00	.01	.06	6.15	.25	.00	.05	.57	.02
1864	.00	14.64	.00	.49	.06	1.33	.26	.00	.01	.06	6.75	.21	.00	.06	.62	.03
1865	.00	16.99	.00	.56	.04	1.39	.30	.00	.01	.06	6.72	.24	.00	.07	.70	.04
1866	.00	17.85	.00	.72	.04	1.34	.23	.00	.01	.06	6.86	.24	.00	.07	.72	.03
1867	.00	20.02	.00	1.59	.05	1.28	.21	.00	.01	.06	6.77	.22	.00	.08	.73	.03
1868	.00	22.97	.00	1.94	.05	1.32	.17	.00	.01	.06	6.30	.24	.00	.09	.77	.04
1869	.00	23.49	.00	2.11	.05	1.41	.15	.00	.01	.06	6.19	.24	.00	.10	.82	.04
1870	.00	20.90	.00	1.99	.06	1.26	.13	.00	.01	.05	5.92	.21	.00	.09	.82	.03
1871	.00	18.07	.00	1.74	.08	.99	.11	.00	.02	.04	5.27	.20	.00	.09	.86	.03
1872	.00	17.62	.00	1.28	.15	.63	.12	.00	.02	.05	5.18	.17	.00	.08	.98	.04
1873	.00	20.60	.00	1.86	.15	1.14	.12	.00	.02	.05	6.79	.16	.00	.08	1.00	.03
1874	.00	23.78	.00	1.95	.10	2.01	.10	.00	.02	.04	8.22	.14	.00	.08	1.01	.03
1875	.00	21.87	.00	1.86	.08	1.66	.09	.00	.02	.03	8.27	.16	.00	.07	1.14	.03

Table H continued...																
1894	.00	16.46	.00	4.52	.06	2.24	.11	.00	.01	.01	7.15	1.15	.00	.04	1.66	.08
1895	.00	17.82	.00	3.73	.06	3.40	.10	.00	.01	.01	6.41	1.22	.00	.03	1.63	.09
1896	.00	19.65	.00	3.22	.05	5.41	.10	.00	.01	.01	5.83	1.31	.00	.03	1.68	.09
1897	.00	21.63	.00	3.23	.04	6.57	.09	.00	.01	.01	6.83	1.31	.00	.02	1.63	.09
1898	.00	24.98	.00	3.31	.04	6.92	.08	.00	.01	.01	6.45	1.35	.00	.02	1.61	.10
1899	.00	33.63	.00	3.81	.06	6.75	.11	.00	.01	.01	8.73	1.38	.00	.02	1.86	.10
1900	.00	35.52	.00	4.76	.07	6.40	.77	.00	.01	.01	9.39	1.40	.00	.02	1.92	.09
1901	.00	33.89	.00	3.43	.06	2.50	.93	.00	.01	.01	9.76	1.15	.00	.02	2.24	.10
1902	.00	35.62	.00	3.49	.07	2.53	1.45	.00	.02	.01	10.06	.97	.00	.04	2.44	.10
1903	.00	33.03	.00	3.35	.09	3.13	1.39	.00	.02	.02	9.55	1.03	.00	.04	4.45	.10
1904	.00	28.23	.00	3.82	.08	2.88	1.07	.00	.02	.01	11.50	1.02	.00	.02	4.45	.10
1905	.00	32.15	.00	3.71	.10	4.81	1.76	.00	.02	.01	13.56	1.08	.00	.02	3.35	.10
1906	.00	36.71	.00	2.81	.12	4.09	2.23	.00	.02	.01	13.29	1.04	.00	.02	4.41	.11
1907	.00	35.13	.00	2.67	.10	4.52	1.46	.00	.02	.01	13.88	1.07	.00	.02	4.73	.14
1908	.00	27.87	.00	2.68	.12	5.74	.14	.00	.03	.01	12.56	1.06	.00	.02	6.20	.13
1909	.00	24.45	.00	2.63	.15	5.28	.64	.00	.04	.01	12.58	1.10	.00	.02	5.88	.12
1910	.00	31.62	.00	3.59	.14	3.97	1.57	.00	.04	.02	15.27	1.16	.00	.01	3.29	.12
1911	.00	46.54	.00	4.05	.14	3.28	1.46	.00	.05	.02	14.36	1.20	.00	.01	3.84	.11
1912	.00	55.02	.00	3.62	.17	5.00	1.73	.00	.05	.03	25.37	1.27	.00	.01	5.05	.12
1913	.00	62.06	.00	3.03	.14	4.87	2.29	.00	.06	.03	22.20	1.46	.00	.01	4.08	.13

Sources: see text.

Appendix Table I: Naval ship construction in Italy's regions, 1861-1913:
private-yard value added at 1911 prices (million lire)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	for the <i>Regia marina</i>					for export		
	Liguria	Venetia	Tuscany	Marches	Campania	Sicily	Liguria	Tuscany
1861	.00	.00	.00	.00	.00	.00	.00	.00
1862	.00	.00	.00	.00	.00	.00	.00	.00
1863	.00	.00	.00	.00	.00	.00	.00	.00
1864	.00	.00	.00	.00	.00	.00	.00	.00
1865	.00	.00	.00	.00	.00	.00	.00	.00
1866	.00	.00	.00	.00	.00	.00	.00	.00
1867	.00	.00	.06	.00	.00	.00	.00	.00
1868	.00	.00	.12	.00	.00	.00	.00	.00
1869	.00	.00	.30	.00	.00	.00	.00	.00
1870	.00	.00	.24	.00	.00	.00	.00	.00
1871	.00	.00	.00	.00	.00	.00	.00	.00
1872	.00	.00	.00	.00	.00	.00	.00	.00
1873	.18	.00	.14	.00	.00	.00	.00	.00
1874	.61	.00	.67	.00	.00	.00	.00	.00
1875	.61	.00	.67	.00	.00	.00	.00	.00
1876	.61	.00	.97	.00	.00	.00	.00	.00
1877	.56	.00	1.57	.00	.00	.00	.00	.00
1878	.00	.00	1.32	.00	.00	.00	.00	.00
1879	.00	.00	1.29	.00	.00	.00	.00	.00
1880	.00	.00	1.28	.00	.00	.00	.00	.00
1881	.00	.00	1.30	.00	.00	.00	.00	.00
1882	.03	.00	1.49	.00	.00	.00	.00	.00
1883	.04	.00	214	.00	.00	.00	.00	.00
1884	.60	.00	274	.00	.26	.00	.00	.00
1885	.89	.00	2.59	.00	.34	.00	.00	.00
1886	1.56	.00	3.66	.00	.75	.00	.00	.00
1887	3.08	.02	3.13	.00	.66	.00	.00	.00
1888	2.15	.09	1.72	.00	.62	.00	.00	.00
1889	2.33	.11	2.32	.00	.74	.00	.00	.00
1890	3.36	.04	1.54	.00	1.01	.00	.00	.00
1891	3.85	.00	1.67	.01	.45	.00	.00	.00
1892	3.03	.00	1.84	.02	.11	.00	.00	.00
1893	1.71	.00	1.57	.03	.27	.00	.00	.46
1894	1.08	.00	.68	.02	.19	.00	1.84	.93

Table I continued...								
1895	.02	.00	.29	.00	.03	.00	5.12	2.15
1896	.05	.00	.00	.00	.09	.00	5.29	4.70
1897	.26	.00	.00	.00	.10	.00	4.27	5.49
1898	1.94	.00	1.76	.00	.01	.00	1.59	3.93
1899	3.02	.03	2.35	.00	.27	.00	1.77	1.50
1900	2.91	.06	2.35	.00	.91	.00	1.79	.16
1901	.65	.08	.62	.00	1.05	.00	3.13	.03
1902	.00	.09	.00	.00	1.15	.00	8.44	.77
1903	.00	.04	.9	.00	.00	.00	.88	1.19
1904	.00	.03	.22	.00	.88	.00	1.66	.85
1905	3.20	.03	3.51	.00	2.57	.00	2.19	.42
1906	8.03	.00	2.93	.00	2.54	.00	1.08	.00
1907	6.97	.00	2.17	.00	.37	.00	.33	1.23
1908	4.79	.00	2.17	.00	.73	.00	.49	2.46
1909	3.67	.00	1.44	.00	.45	.00	.28	2.46
1910	8.22	.00	.17	.00	2.00	.00	.31	2.49
1911	19.35	.09	.84	.00	3.84	.30	.41	1.30
1912	18.22	.25	3.20	.00	4.27	.31	.84	.04
1913	17.51	.27	3.10	.00	3.97	.00	1.69	.00

Sources: see text.